

US-PAT-NO: **6460705**

DOCUMENT-IDENTIFIER: US 6460705 B1

TITLE: Method of creating identifiable smaller stacks of
currency bills within a larger stack of currency bills

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US Patent No. - PN (1):
6460705

Detailed Description Text - DETX (2):

Referring to FIGS. 1a and 1b, a multi-pocket document processing device 100 such as a currency handling device according to one embodiment of the present invention is illustrated. Currency bills are fed, one by one, from a stack of currency bills placed in an input receptacle 102 into a transport mechanism 104. The transport mechanism 104 guides currency bills to one of a plurality of output receptacles 106a-106h, which may include upper output receptacles 106a, 106b, as well as lower output receptacles 106c-106h. Before reaching an output receptacle 106 the transport mechanism 104 guides the bill through an evaluation region 108 where a bill can be, for example, analyzed, authenticated, denominated, counted, and/or otherwise processed. In alternative embodiments of the currency handling device 100 of the present invention, the evaluation region 108 can determine bill orientation, bill size, or whether bills are stacked upon one another. The results of the above process or processes may be used to determine to which **output** receptacle 106 a bill is **directed**. The illustrated embodiment of the currency handling device has an overall width, W.sub.1, of approximately 4.52 feet (1.38 meters), a height, H.sub.1, of approximately 4.75 feet (1.45 meters), and a depth, D.sub.1, of approximately 1.67 feet (0.50 meters).

one-hundred dollar bills into the sixth lower **output** receptacle 106h. The operator may also instruct the currency handling device 100 to deliver those bills whose denomination was not determined, no call bills, to the first upper output receptacle 106a. In such an embodiment, upper output receptacle 106a would function as a reject pocket. In an alternative embodiment, the operator may instruct the currency handling device 100 to also evaluate the authenticity of each bill. In such an embodiment, authentic bills would be **directed** to the appropriate lower **output** receptacle 106c-106h. Those bills that were determined not to be authentic, suspect bills, would be delivered to the second upper output receptacle 106b. A multitude of user defined modes are disclosed by co-pending U.S. patent application Ser. No. 08/916,100 entitled "Multi-Pocket Currency Discriminator" which was filed on Aug. 21, 1997, incorporated herein by reference in its entirety, which may be employed in conjunction with the present invention such as the device illustrated in FIGS. 1a and 1b.

Detailed Description Text - DETX (7):

According to one embodiment, the currency handling d

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suspect bills, would be delivered to the second upper output receptacle 106b.
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as the device illustrated in FIGS. 1a and 1b.

Detailed Description Text - DETX (7):

According to one embodiment, the currency handling devic

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secured together such as with a paper strap. For example, one dollar bills are segregated into stacks of one-hundred one dollar bills and then bound with a paper strap. Strapping facilitates the handling of bulk currency allowing the strapped stacks of bills to be counted rather than the individual currency bills.

Detailed Description Text - DETX (60):

In an alternative embodiment of the present invention, larger stacks of bills comprising smaller stacks of bills having alternative face orientations, such as illustrated in FIG. 23, can be formed in the lower output receptacles 106c-h without using the bill facing mechanism. In such an embodiment, face-up bills are transported to a "target" lower output receptacle and face-down bills are transported to another target lower output receptacle until the limit is reached in both lower output receptacles. The target receptacles 106 are then switched and the process is repeated. For example, bills of a given denomination having a face-up orientation are **routed** to the first lower **output receptacle** 106c and bills of the same denomination having a face-down orientation are **routed** to the second lower **output receptacle** 106d. Face-up and face-down bills continue to be processed into the first and second lower output receptacles 106c,d, respectively, until a number of bills equivalent to the limit have been processed into the first and second lower output receptacles 106c,d. At that time, the face-up bills are then **routed** to the second lower **output receptacle** 106d and the face-down bills are **routed** to the first lower **output receptacle** 106c. Bills continue to be processed in this manner until the limit is again reached in both the first and second lower output receptacles 106c,d at which time the target lower output receptacles 106 of the face-up and face-down bills are again switched. The process continues as described until the entire batch of currency is processed and each of the lower output receptacles 106c,d contain larger stacks of bills comprising smaller stacks having alternating face orientations. Obviously, the limit will be reached in one of the two lower output receptacles 106c,d before the other of the two lower output receptacles 106c,d. Accordingly, the excess bills are off-sorted or, alternatively, a similar method is performed in the adjacent lower output receptacles 106e,f. For example, when the limit is first reached with respect to face-up bills **directed** to the first lower **output receptacle** 106c, those face-up bills are then **routed** to the third lower **output receptacle** 106e

ills are again switched. The process continues as described until the entire batch of currency is processed and each of the lower output receptacles 106c,d contain larger stacks of bills comprising smaller stacks having alternating face orientations. Obviously, the limit will be reached in one of the two lower output receptacles 106c,d before the other of the two lower output receptacles 106c,d. Accordingly, the excess bills are off-sorted or, alternatively, a similar method is performed in the adjacent lower output receptacles 106e,f. For example, when the limit is first reached with respect to face-up bills **directed** to the first lower **output receptacle** 106c, those face-up bills are then **routed** to the third lower **output receptacle** 106e while face-down bills continue to be **directed** to the second lower **output receptacles** 106d. Should the limit be reached in the third lower **output receptacle** 106e before the second lower **output receptacle** 106d, the face-up bills can then be **directed** to the next lower **output receptacle** 106f. When the limit in the second output receptacle 106d is eventually reached, the target lower output receptacles 106c,d of the face-up and face-down bills can be switched as described. While the above example was discussed in conjunction with the processing of only one denomination of currency bills, in other alternative embodiments more than one denomination of currency bills can be processed in a similar manner.

Detailed Description Text - DETX (63):

Many of the aforementioned modes of operation can be combined with a strapping mode in a multitude of alternative embodiments of the present invention. For example, in an alternative embodiment of the present invention, several denominations of U.S. currency bills may be processed pursuant to a strapping mode of operation. In such an embodiment U.S. \$1, \$5, \$10, \$20, \$